Remarks

The present amendment responds to the Official Action dated October 13, 2004. A petition for a one month extension of time to respond and authorization to charge Deposit Account No. 50-1058 the large entity extension fee of $120 accompany this amendment. The Official Action objected to informalities in claims 3, 5, 16, 25, 27, and 37-41. The Official Action rejected claims 1, 2-5, 23-27, and 36 under 35 U.S.C. §103(a) based on Ahmed et al. U.S. Patent No. 6,519,773 (Ahmed) in view of Freeman et al. U.S. Patent No. 5,724,091 (Freeman) and further in view of Quigley et al. U.S. Patent No. 6,650,624 (Quigley). These grounds of rejection are addressed below. Claims 6-22 and 28-35 were objected to as being dependent upon a rejected claim base but were indicated to be allowable if rewritten in independent form. Claims 37-41 were indicated to be allowable if the informality claim objection number 3 is overcome. Claims 1-23, 25, 27, 29, 33, and 35-40 have been amended to be more clear and distinct, claims 40 and 41 were amended to renumbered the claims to 39 and 40, respectively, and claim 28 has been canceled. Claim 28 has been rewritten in independent form as newly added claim 41. Claims 29, 33, and 35, formerly dependent on claim 28, have been amended to depend from the newly added claim 41. Claims 1-27 and 29-41 are presently pending.

Amendments to the Specification

The section titled Related Applications and its accompanying paragraph are moved from page 3 to page 2 before the Background of the Invention as requested by the Official Action. The

Amendments to the Drawings:

A replacement set of drawings, Figs. 1-13, is filed herewith to respond to the drawing objections.

"Annotated Sheets Showing Changes" and "Replacement Sheets" for Figs. 1-3, 6, 10, 12, and 13 are enclosed herewith.

In Fig. 1, the title of element 108 has been changed from "Front End" to "Front End Processor". Support for this change can be found at page 7, lines 19, 20, and 25 where the front end processor 108 is discussed.

In Fig. 2D, frequency reference points are updated to include the 0 Hz reference point and adding MHz units to the 5 MHz, 7 MHz, and the 42 MHz reference points to be consistent with Fig. 2C, for example. The 7 MHz reference point is the point of interference noted in the specification discussion of Fig. 2D at page 8, lines 17-19.

In Fig. 3, the title of element 104 has been changed from "Receiver" to "Receiver System". Support for this change can be found at page 7, lines 15-19 where the receiver system 104 of Fig. 1 is discussed.

In Fig. 6, the input line labeled "102.4" has been changed to "102.4 mega samples per second" to correspond to the specification at page 11, lines 13-16. The subscript on the down-converter 606 is changed to N for the Nth channel represented in Fig. 6 and the output of decimator 612 is changed to CHN for the Nth channel. Support for these changes can be found at page 12, in lines 8-11 where it is indicated there are N channels within the upstream band and down-converters 602, 604, and 606 are dedicated to one of the N channels. Down converter 606

is the last down-converter in the series and consequently corresponds to CHN as also indicated by the CHN output of the decimator 612 connected to down-converter 606.

In Fig. 10, the input line 1002 is changed from "102.4 MHz Input From A/D" to "102.4 Mega Samples Per Second Input From A/D" to correspond to the description in the specification at page 16, lines 15 and 16 where the data input 1002 is discussed to be 102.4 mega-samples per second.

In Fig. 12, the I_n, Q_n, and $Data_n$ labels associated with data memory 1204 have been changed to correct the channel reference number for channel N, changing I_n, Q_n, and $Data_n$ to I_N, Q_N, and $Data_N$. These changes have been made to be consistent with the naming convention for channel N used in the specification and figures, such as Figs 5, 8, and 13, for example.

In Fig. 13, the reference number for the vectored data, associated with the time tracking unit (time recovery) 1224, has been changed from 1220 to 1226 to properly correspond to unit 1226 in Fig. 12 as the time state storage associated with the time tracking loop (time recovery) 1224. The element 1218 in Figure 13 has been changed to 1218' to resolve the different 1218 elements in Figures 12 and 13 as noted in the Office Action. The reference number for the vectored data, associated with the phase tracking & symbol slicer 1218', has been changed from 1226 to 1220 to properly correspond to the unit 1220 in Fig. 12 as the phase state storage.

caption has also been changed to Cross-Reference to Related Applications as requested by the Official Action.

U.S. Application Serial No. 09/695,647 for "APPARATUS AND METHOD FOR MULTI-CHANNEL COMMUNICATIONS SYSTEM", and U.S. Application Serial No. 09/695,536 for "APPARATUS AND METHOD FOR MULTI-CHANNEL RECEIVER" have been added, as requested by the Official Action.

The paragraph beginning on page 2, line 26 has been amended to correct the U.S. Patent number incorrectly listed as 5,41,468 to 5,841,468 to correctly refer to the U.S. Patent titled "SYSTEM AND METHOD FOR ROUTING DATA MESSAGES THROUGH A CABLE TRANSMISSION SYSTEM" issued to Wright. Also, the title of U.S. Patent 6,100,883 has been changed from HOME INTERFACE CONTROLLERFOR PROVIDING INTERACTIVE CABLE TELEVISION to HOME INTERFACE CONTROLLER FOR PROVIDING INTERACTIVE CABLE TELEVISION to correct a typo.

The paragraph beginning on page 6, line 9 has been amended to correct an incomplete sentence so as to properly reference the two main elements of Figure 1. The sentence beginning on line 13 "In an illustrative embodiment, the system 100 a transmitter 102 and a receiver system 104." is amended to "In an illustrative embodiment, the system 100 includes a transmitter 102 and a receiver system 104."

The paragraph beginning on page 7, line 4 has been amended on line 9 to spell out the first use of the abbreviation DOCSIS in the Detailed Description section. For reasons of improved clarity, the phrase "non-overlapping channels of .2 MHz,.4 MHz,.8 MHz,1.6 MHz, or

3.2MHz" has been changed to "non-overlapping channels of .2 MHz,_.4 MHz,_.8 MHz,_1.6 MHz, or 3.2MHz" to add spacing between the channel frequency numbers. A typo on line 21 has been amended by adding a period at the end of the sentence beginning on line 17 "In DOCSIS..." and ending on line 21 "...of Figure 2E." This same sentence beginning on line 17 has also been amended to change "as illustrated in the frequency diagram of Figure 2E." to "is illustrated in the frequency diagram of Figure 2E." to correct a typo. In this paragraph, an incorrect figure reference has also been corrected. At page 7, line 23, Figure 2 has been amended to Figure 3 to correctly reference the block diagram that includes cables 300, subscribers 302, and headend 304. Also, in this paragraph, the name of the element labeled 104 has been amended to correctly refer to element 104 as the receiver system as introduced in the first paragraph of the Detailed Description section beginning on page 6, lines 13-14.

The paragraph beginning on page 7, line 27 has been amended to correct a reference to the system illustrated in Figure 3. The communications system 100 of Figure 1 illustrates a system having a single transmitter 102. In the paragraph beginning on page 7, line 27 reference to system 100 has been amended to reference system 310 consistent with the discussion in the same sentence which addresses a system having multiple transmitters. The system 310 reference is also added to page 8, line 2.

The paragraph beginning on page 8, line 16 has been amended to change cable 408 to cables 408 to properly reference the multiple cables 408 that are shown in Figure 4. Also, optical fiber 410 has been amended to optical fibers 410 to properly reference the multiple optical fibers 410 that are shown in Figure 4.

The paragraph beginning on page 9, line 3 has been amended to correct an incorrect element reference in Figure 4. The reference to mini-headend 302 has been amended to mini-headend 400, 402, 404 using the reference numbers 400, 402, 404 for the mini-headends introduced in the preceding paragraph beginning on page 8, line 16.

The paragraph beginning on page 9, line 22 has been amended to correct the abbreviated channel name for channel CHn to CHN to be consistent with the channel output names CH1, CH2, and CHN of baseband element 500 in Figure 5.

The paragraph beginning on page 10, line 10 has been amended to correct the name of element 600 in Figure 6 from a front end 600 to a front end processor 600. Support for this change can be found in the brief description of the drawings for Figure 6 which states that "Figure 6 is a conceptual block diagram of one embodiment of a front end processor in accordance with the present invention". Further support for this change can be found in the second sentence of this paragraph that begins "The front end processor 600..." and correctly identifies element 600 as a front end processor. Also, the paragraph has been amended to clarify the usage of 102.4 in line 18 to be 102.4 mega-samples per second. Support for this change can be found in the first sentence of this paragraph on page 10, beginning on line 10 where the sample rate of 102.4 mega-samples per second was introduced.

The paragraph beginning on page 10, line 26 has been amended to change the reference name for element 600 from a front end 600 to a front end processor 600 in the first three sentences of this paragraph. The mathematical term on page 11, line 7 $e^{j\omega_N n}$ is changed to $e^{j\omega_N n}$ to correct a typo consistent with the usage of the mathematical term in the same sentence

defining ω_N, "where ω_N is the center frequency". This same sentence is further amended to remove a period in line 8 changing "particular channel., to effect" to "particular channel, to effect" to correct a typo.

The paragraph beginning on page 12, line 4 has been amended to correct the abbreviated channel names "ch1,ch2,ch3;ch4;ch5,ch6, and chn1,chn2,chn3, and chn4" to "CH1, CH2, CH3; CH4; CH5, CH6, and CHN1, CHN2, CHN3, and CHN4" to be consistent with the channel names used in Figure 8.

The paragraph beginning on page 12, line 13 has been amended to remove a typographical error. The letter "a" is removed from line 15, changing "yielding a I/Q data streams representing the component channels" to "yielding I/Q data streams representing the component channels".

The paragraph beginning on page 13, line 10 has been amended at lines 12 and 13 to change "the front end described in the discussion related to Figure 6" to "the front end processor described in the discussion related to Figure 6" to correctly reference the front end processor in Figure 6 that is discussed on page 10, lines 13-16. A typographical error is corrected on page 13, line 15 changing "Such as system" to "Such a system". The reference numbers to the down-converters in Figure 7 have been amended in line 24 changing "converters 728 through 726" to "converters 702 through 726". Support for this change can be found in the preceding paragraph beginning on page 13, line 1 where the down-converters in Figure 7 were introduced.

The paragraph beginning on page 13, line 28 has been amended to correct the usage of "downconverter" on page 14, lines 11, 13, 14 and 15 and "down converter" in lines 12 to "down-

converter" to be consistent with other usage of the term down-converter in this paragraph, such as that used at line 2 which recites "down-converters (704, 706, 708)". For similar reasons of consistency, the term "downconversion" used in line 14 is amended to "down-conversion". In line 17, the "decimation filters 702 through 726 and the down-converters 728 through 752" are labeled incorrectly and have been amended to "decimation filters 728 through 752 and the down-converters 702 through 726" to be consistent with the naming of these elements as used in the specification. For example, the paragraph beginning on page 13, line 1 identifies the "down conversion stages 702 through 726" and the "decimation stages 728 through 752."

The paragraph beginning on page 18, line 5 has been amended in line 10 to change "A clock 1206" to "A clock 1203" to be consistent with the numbering of the clock, abbreviated as CLK 1203, used in Figure 12.

The paragraph beginning on page 18, line 20 has been amended to clarify the description of the elements 1218, 1220, 1224, and 1226 used in Figure 12. The short operational titles used for elements 1218, 1220, 1224, and 1226 in Figure 12 are included in parenthesis in the description of the elements. The "phase tracking loop 1218" is changed to "phase tracking loop (phase recovery) 1218" and the "phase tracking storage 1220" is changed to "phase tracking storage (phase state) 1220". Also, the "time tracking loop 1224" is changed to "time tracking loop (time recovery) 1224" and the "time tracking storage 1226" is changed to "time tracking storage (time state) 1226".

The paragraph beginning on page 19, line 1 has been amended to correct the channel reference number for channel N, changing I_n and Q_n to I_N and Q_N and changing in line 7 the

phrase "data from the nth channel written into the nth data memory segment" to the phrase "data from the Nth channel written into the Nth data memory segment". These changes have been made for consistency in the naming convention for channel N used in the specification and figures, such as Figs 5, 8, and 13, for example. Also, a typo at line 12 is corrected by changing the phrase "is least twice" to the phrase "is at least twice".

The paragraph beginning on page 20, line 11 has been amended to correct the name of element 1206 in Figure 12 in lines 15 and 17 from "equalizer 1206" to "equalizer subsystem 1206". Support for this change can be found in the paragraph beginning on page 18, line 5 where the "equalizer subsystem 1206" is introduced at line 13. The short operational titles used for elements 1218 and 1224 in Figure 12 are included in parenthesis. The "phase tracking loop 1218" is changed to "phase tracking loop (phase recover) 1218" and the "time tracking loop 1224" is changed to "time tracking loop (time recovery)".

The paragraph beginning on page 20, line 24 has been amended to correct the reference of channel n to channel N as used in Figure 13 in data memory 1204 and generally in the specification for the Nth channel. In line 25 of this paragraph, "channels 1 through "n" respectively" has been amended to "channels 1 through "N" respectively". On page 21, lines 3 and 5 of this paragraph, "three and n" has been amended to "three and N". Support for this change can be found in the paragraph beginning on page 19, line 24 where on page 20 channel N is discussed at lines 4-7.

The paragraph beginning on page 21, line 10 has been amended to correct a typographical error. A period in line 14 has been removed from the middle of a sentence.

The paragraph beginning on page 21, line 24 has been amended to change the reference to CH4 to CHN as illustrated in Figure 13 in the context of the discussion on channels 1, 2, 3, and N. For example, in this paragraph beginning at line 27, the thirty-two locations of data memory 1204 in Figure 13 are described where "the first sixteen of which are allocated to channel CH1, the next eight of which are allocated to channel CH2, the next four allocated to channel CH3, and the last four allocated to channel CHN."

The paragraph beginning on page 22, line 4 has been amended to correct an incorrect channel name and incorrect reference numbers. In line 5 of this paragraph, CH4 has been changed to CHN to properly reference the use of CHN in Figure 13. The references to elements 1220, and 1226 have been corrected in the description to be consistent with the elements labeled 1220, and 1226 in Figure 12 and Figure 13. The element 1218 in Figure 13 has been changed to 1218' to resolve the different 1218 elements in Figures 12 and 13 as noted in the Office Action. In lines 7 and 8, "the phase tracking loop 1226 of" has been changed to "the phase tracking loop 1218' of". In line 12, "the time tracking loop vector 1220" has been changed to "the time tracking loop vector 1226". In line 15, "the phase tracking loop vector 1226" has been changed to "the phase tracking loop vector 1220" and in line 20, "phase tracking loop state vector 1226" has been changed to "phase tracking loop state vector 1220".

The paragraph beginning on page 22, line 23 has been amended to correct two incorrect reference numbers and a typo. The "equalizer 1204" at line 27 has been amended to "equalizer 1208" to properly reference the equalizer 1208 in Figure 12. The "state vector 1226" has been

amended to "state vector 1220" to properly reference the updated phase tracking loop state vector that is stored in the phase tracking storage (phase state) 1220.

The paragraph beginning on page 23, line 9 has been amended to correct a typographical error. The duplicate words "decision value" from line 20 are deleted. In line 25, the phrase "A symbol slicer within the phase tracking circuit determines" has been replaced with "A symbol slicer within the phase tracking circuit 1218' determines" to clarify the identity of the element 1218' in the discussion relating to Figure 13.

Informality Objections to Claims 3, 5, 16, 25, 27, and 39

Claims 3, 5, 16, 25, and 27 have been amended to be more clear and distinct. More particularly, claims 3, 5, 16, 25, and 27 have been amended to address the informality objections as discussed below.

Claims 5 and 27 have been amended to remove the objected to parentheses.

Claims 3, 16, and 25 have been amended to spell out DOCSIS.

Claim 39 had been inadvertently left out and no claims depended from this missing claim. Consequently, claims 40 and 41 have been renumbered to claims 39 and 40, respectively. Claim 41 which depended from claim 40 has been amended to depend from claim 39.

Typos in Claims

In the process of preparing this response, a number of typos in the claims were noted and corrected as addressed below.

In claim 23, a period was removed in step (C) changing "non-overlapping channels. to convert" to "non-overlapping channels to convert".

In claim 35, the word "steps" was replaced with "step" to correspond to the single presented step (O).

In claim 36, "The method of claim 25" was replaced with "The method of claim 35" as claim 35 has the referenced limitation of step (O).

In claim 37, the step "(G2)" was replaced with the step "(O2)" as claim 36 has the referenced limitation of step O2 and there is no step G2.

In claim 38, the step "(G3)" was replaced with the step "(O3)" as claim 36 has the referenced limitation of step O3 and there is no step G3.

The Art Rejections

As addressed in greater detail below, Ahmed, Freeman, and Quigley do not support the Official Action's reading of them. Considering the amended claims, it is clear the rejections based upon various applied combinations of Ahmed in view of Freeman and further in view of Quigley are not supported by those references and the rejections based thereupon should be reconsidered and withdrawn. Further, the Applicant does not acquiesce in the analysis of

Ahmed, Freeman, and Quigley made by the Official Action and respectfully traverses the Official Action's analysis underlying its rejection.

The Official Action rejected claims 1, 2-4, 23-26, and 36 under 35 U.S.C. §103(a) based on Ahmed in view of Freeman and further in view of Quigley. Ahmed discloses a digitized cable television (CATV) network for transmission of a plurality of video signals. Ahmed addresses the processing of individual channels. Each video signal is processed individually prior to multiplexing and transmission of the multiplexed digital signal, for example, over an optical cable between connecting points separated by long distances. In Fig. 4 of Ahmed, m analog video channel signals A1, A2, ..., $A_i(t)$, ..., Am are "individually sampled and decimated in the digitizer 402" and the outputs "of each analog video channel" of the digitizer $Z_i(t)$ "are arranged in a digital format in the framer 404." Ahmed, col. 8, lines 36-39. Fig. 5A of Ahmed, further illustrates this teaching of individual channel processing in an "embodiment of the digitizer 402 used to digitize and decimate each analog video channel $A_i(t)$" and "Each analog video channel $A_i(t)$ is provided to a downcoverter 502 followed by a PF 504." (emphasis added). Ahmed, col. 9, lines 27-31. Ahmed does not disclose and does not make obvious "... one or more analog to digital converters (ADCs), the number of ADCs being less than the number of non-overlapping channels, the one or more ADCs being configured to convert the entire band containing two or more non-overlapping channels to a digital data stream sampled at a rate of at least twice the highest frequency within the band;" (emphasis added) as presently claimed in claim 1.

In addition, Ahmed teaches away from any approach that would combine the processing of each channel by indicating that "...it is advantageous to frame at a low bit-rate to provide

relatively more flexibility in dropping and adding channels." Thus, Ahmed makes it clear that access to the individual channels is advantageous to his approach as it allows flexibility in dropping and adding channels. Ahmed, col. 9, lines 9-23. Ahmed further maintains a strictly single channel processing approach for local subscriber distribution. In local subscriber distribution, a multiplexed digital signal containing a plurality of digital channels is demultiplexed, individually processed and then combined using frequency division multiplexing (FDM) to produce an analog broadband signal. Ahmed, col. 11, lines 48-67 and col. 13, lines 5-32. Ahmed's CATV network used in a transmitter does not disclose and does not make obvious "a receiver containing an indexer configured to operate on the output data stream, sequencing through the multiple channels so that data, including phase state, time state, and equalizer state, related to each channel is processed in sequence to phase correct, time correct, and equalize the data stream for all the constituent channels" (emphasis added) as presently claimed in claim 1 of the present invention.

The Office Action correctly states that "Ahmed et al fails to specifically teach the use of ADC's in the receiver that are less than the number of non-overlapping channels." The Office Action also correctly states that "Moreover, Ahmed et al also fails to disclose a receiver with the ability to phase correct, time correct, and equalize."

The Office Action relies upon Freeman and Quigley to address these admitted deficiencies of Ahmed. However, as addressed in greater detail below, Freeman and Quigley do not overcome the deficiencies of Ahmed as a reference.

Freeman states that "An A/D converter may not be needed for each video signal 1, but rather fewer converters, or even a single converter are capable of digitizing various video signals 1." Freeman, col. 4, lines 39-48. This brief statement is insufficient to disclose how fewer converters or even a single converter can be used in processing each individual channel as disclosed in Ahmed, such as Ahmed's channel digitizer of Fig. 5A. Each of Ahmed's channel digitizers, are designed for a specific frequency band as Ahmed indicates "...analog video channels are typically received in 6 MHz wide analog bands modulated onto an IF carrier,..." and in a further example by Ahmed, a 6 MHz analog video channel is indicated to occupy "... a bandwidth between 40 MHz and 46 MHz." Ahmed, col. 6, lines 5-7 and col. 9, lines 39-42. Assuming for simplicity, two non-overlapping channels, it is not at all obvious how Freeman offers any solution for converting the two channels operating in two different frequency bands with a single A/D converter to two data streams in the manner of Ahmed's digitizers, since each of Ahmed's digitizers is set up for the frequency band of interest in order to maintain, at least in part, Ahmed's desired flexibility for adding and dropping channels. Consequently, Freeman does not cure the deficiencies of Ahmed as a reference, and the combination of Ahmed in view of Freeman does not make obvious the present invention.

Quigley, on the other hand, describes a cable modem apparatus with a separate stage for time correction loop 584, a separate stage for carrier phase correction loop 586, and separate stages for additional functions. Quigley, Fig. 3 and col. 11, lines 26-45. Quigley teaches away from any combining of the time correction and phase correction functions by stating that "Applicant's system provides separate clock frequency recovery and clock phase recovery stages

and disposes the Nyquist filters between the clock frequency recovery and clock phase recovery stages." Quigley, col. 28, lines 36-39. Quigley does not disclose and does not make obvious a "a receiver containing an indexer configured to operate on the output data stream, sequencing through the multiple channels so that data, including phase state, time state, and equalizer state, related to each channel is processed in sequence to phase correct, time correct, and equalize the data stream for all the constituent channels" as claimed in claim 1 of the present invention. Consequently, Quigley does not cure the deficiencies of Ahmed as a reference, and the combination of Ahmed in view of Freeman and further in view of Quigley does not make obvious the present claims.

Dependent claims 2-4 were rejected under 35 U.S.C. §103(a) based on Ahmed in view of Freeman and further in view of Quigley. Since claims 2-4 depend from and contain all the limitations of claim 1 as presently amended, claims 2-4 distinguish from the references in the same manner as claim 1.

Claim 23 stands on its merits as distinguishing over Ahmed in view of Freeman and further in view of Quigley. Ahmed's digitizer does not disclose and does not make obvious "(C) ... to convert the entire band to a digital data stream sampled at a rate of at least twice the highest frequency within the band;" (emphasis added) as claimed in claim 23 of the present invention. Ahmed's CATV network used in a transmitter also does not disclose and does not make obvious "(F) sequencing through the multiple channels to phase correct, time correct, and equalize the data stream for all the constituent channels" (emphasis added) as claimed in claim 23 of the present invention. As indicated in the discussion regarding claim 1 above, Ahmed distinctly

discloses individual channel processing with no motivation to combine the channel processing, and rather teaches away from any combining of channel processing. Ahmed in view of Freeman and further in view of Quigley do not resolve the deficiencies of Ahmed as discussed regarding claim 1.

Dependent claims 24-26 and 36 were rejected under 35 U.S.C. §103(a) based on Ahmed in view of Freeman and further in view of Quigley. Since claims 24-26 and 36 depend from and contain all the limitations of claim 23, claims 24-26 and 36 distinguish from the references in the same manner as claim 23.

As amended, claims 5 and 27 disclose a flexibly selected center frequency. In the specification of the present invention, it is stated "The center frequencies of these channels may be selected in a manner that avoids interference and may be chosen with complete flexibility, ..." Present specification page 7, lines 12 and 13. The present invention discloses, in one embodiment, an apparatus and method for operating on two or more non-overlapping channels, where the channels have flexibly selected center frequencies. The apparatus and method for operating on two or more non-overlapping channels, where the channels have flexibly selected center frequencies, would not have been obvious to a person of ordinary skill in the art at the time the invention was made. Further, since claims 5 and 27 depend from and contain all the limitations of claims 1 as amended and 23, respectively, claims 5 and 27 distinguish from the references in the same manner as claims 1 as amended and 23, respectively.

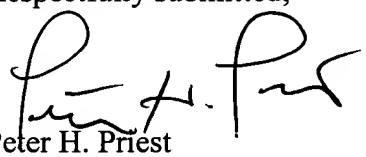
Claim 41 has been newly added to rewrite claim 28 in independent form including all of the limitations of the base claim 23 placing claim 41 in order for allowance. Claims 29, 33, and

35 formerly dependent upon claim 28 have been amended to depend from claim 41 placing claims 29-40 in order for allowance as well.

Conclusion

All of the presently pending claims, as amended, appearing to define over the applied references, withdrawal of the present rejection and prompt allowance are requested.

Respectfully submitted,



Peter H. Priest
Reg. No. 30,210
Priest & Goldstein, PLLC
5015 Southpark Drive, Suite 230
Durham, NC 27713-7736
(919) 806-1600

Annotated Sheet Showing Changes

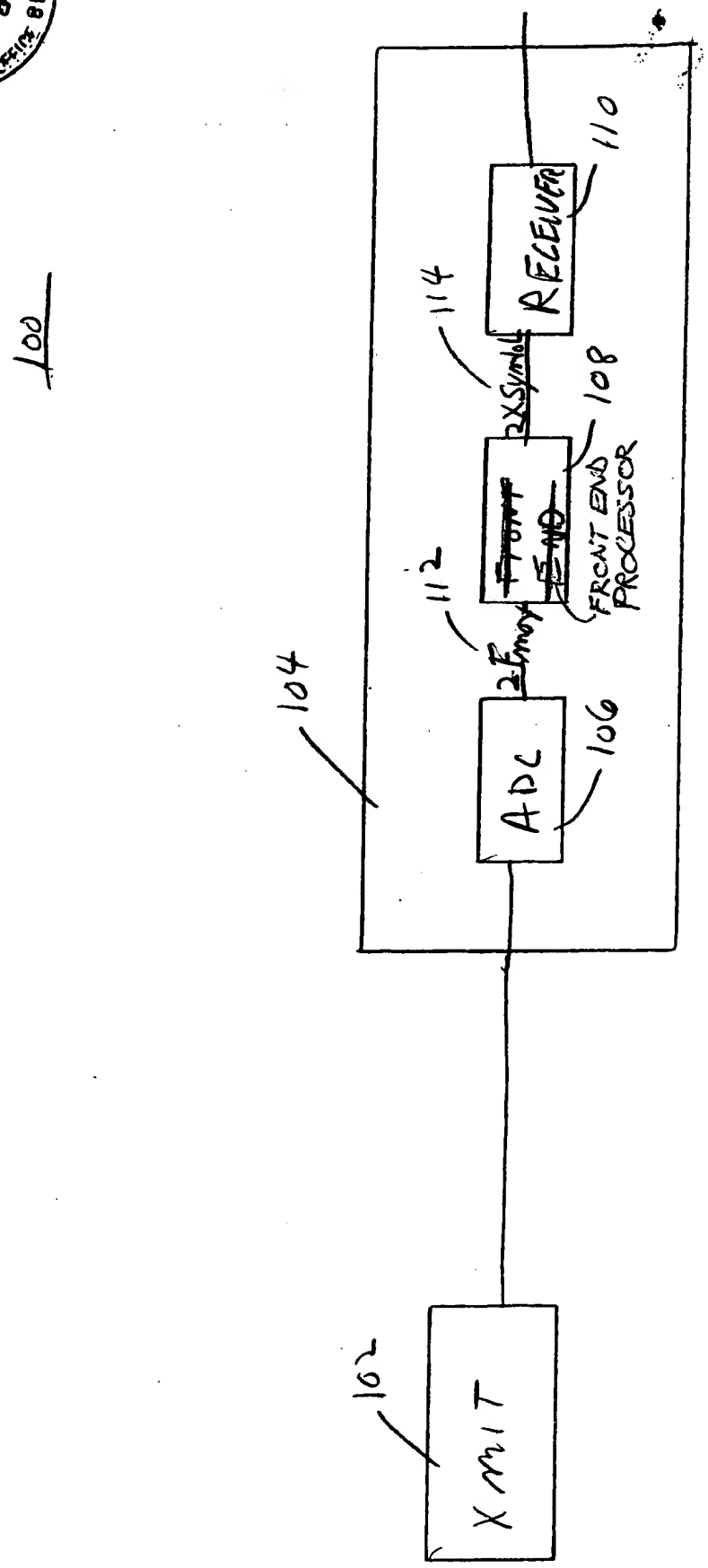


FIGURE 1

Annotated Sheet Showing Changes

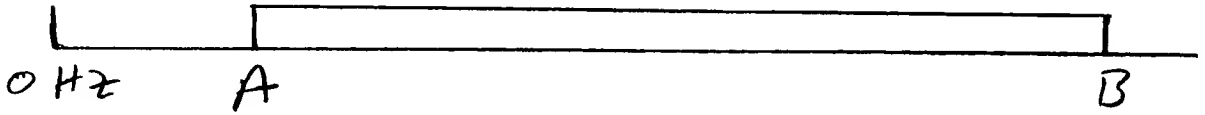


FIGURE 2A

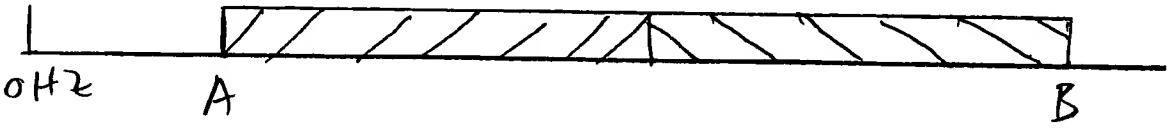


FIGURE 2B

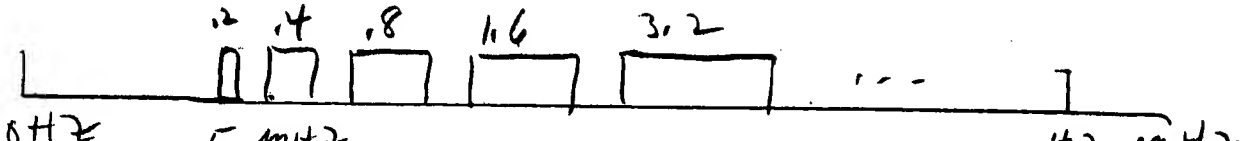


FIGURE 2C

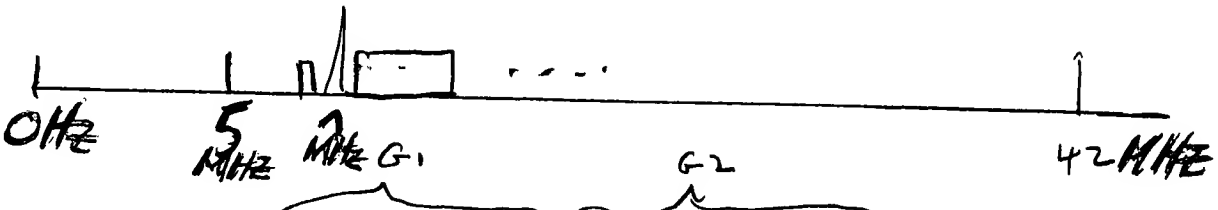


FIGURE 2D

FIGURE 2E

Annotated Sheet Showing Changes

310
~~100~~

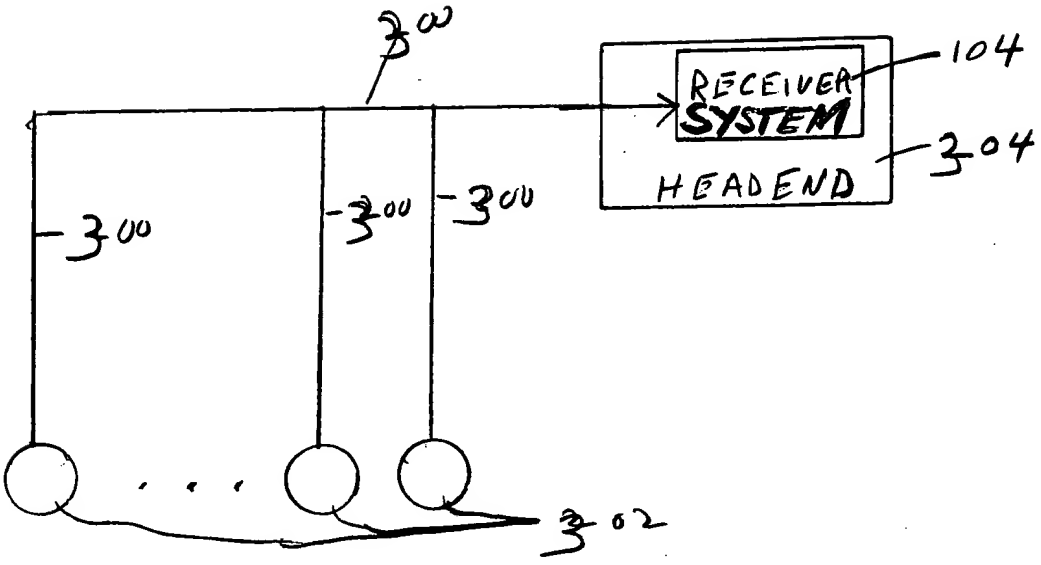


FIGURE 3

Annotated Sheet Showing Changes

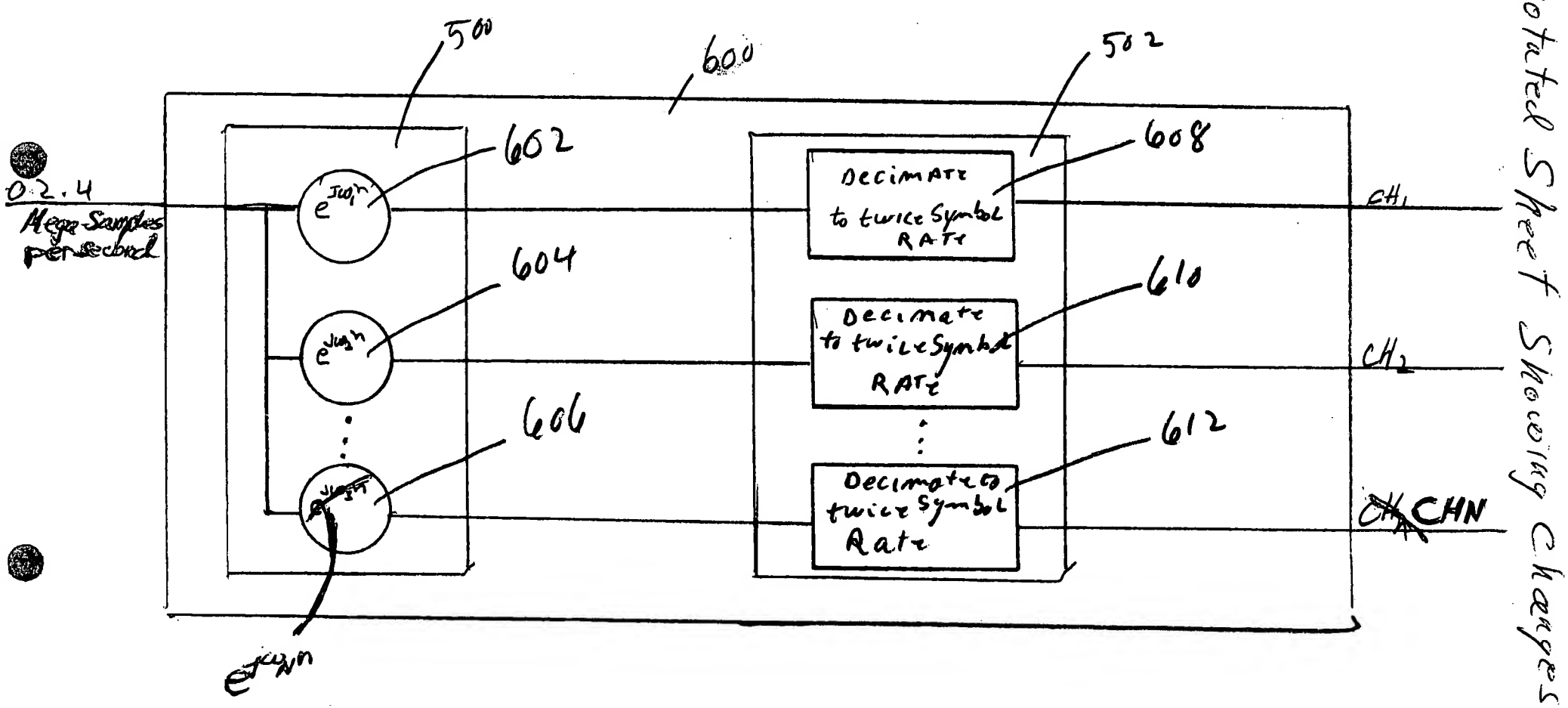


FIGURE 6

FIGURE 10 — Annotated Sheet Showing Changes — 1000

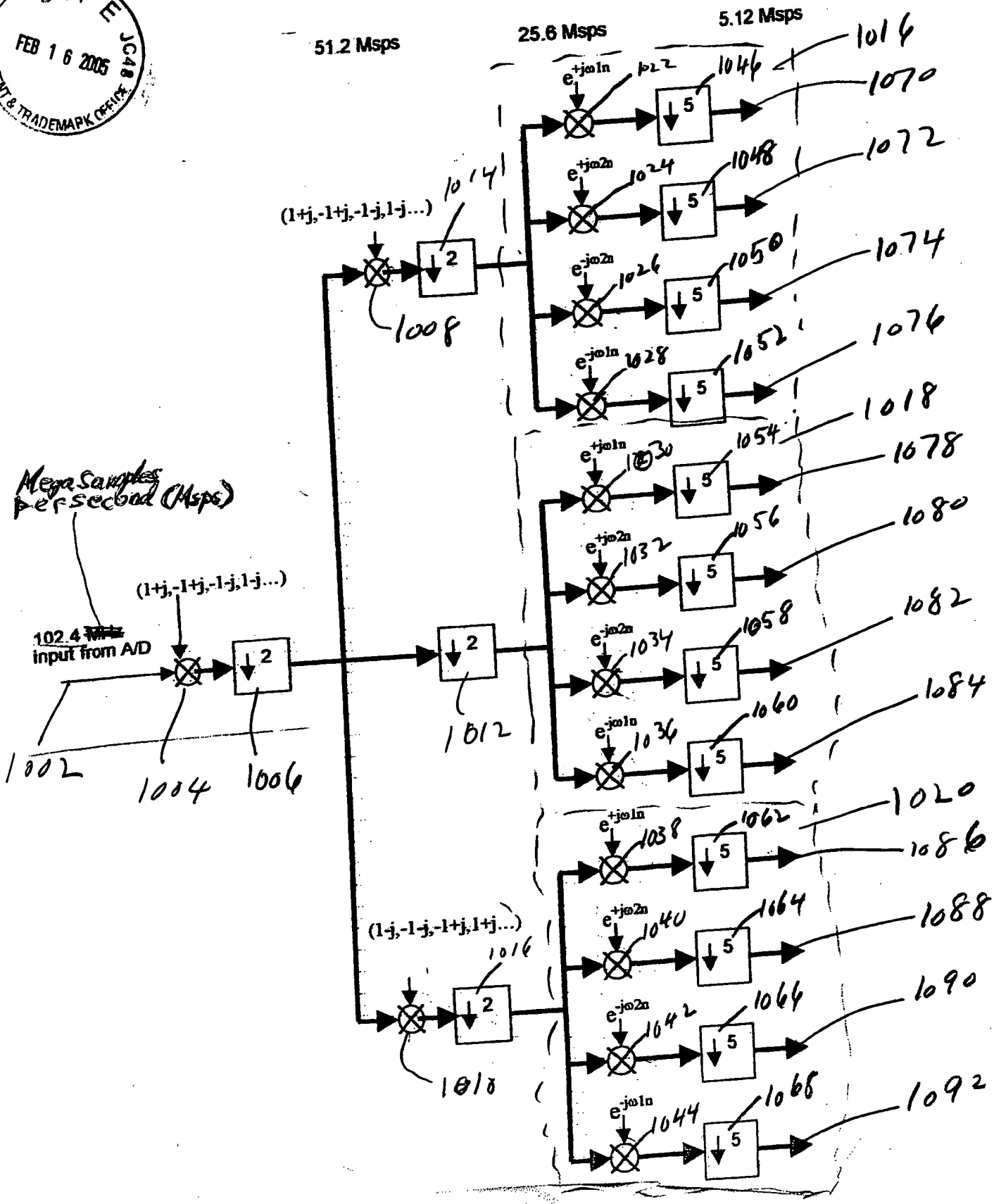
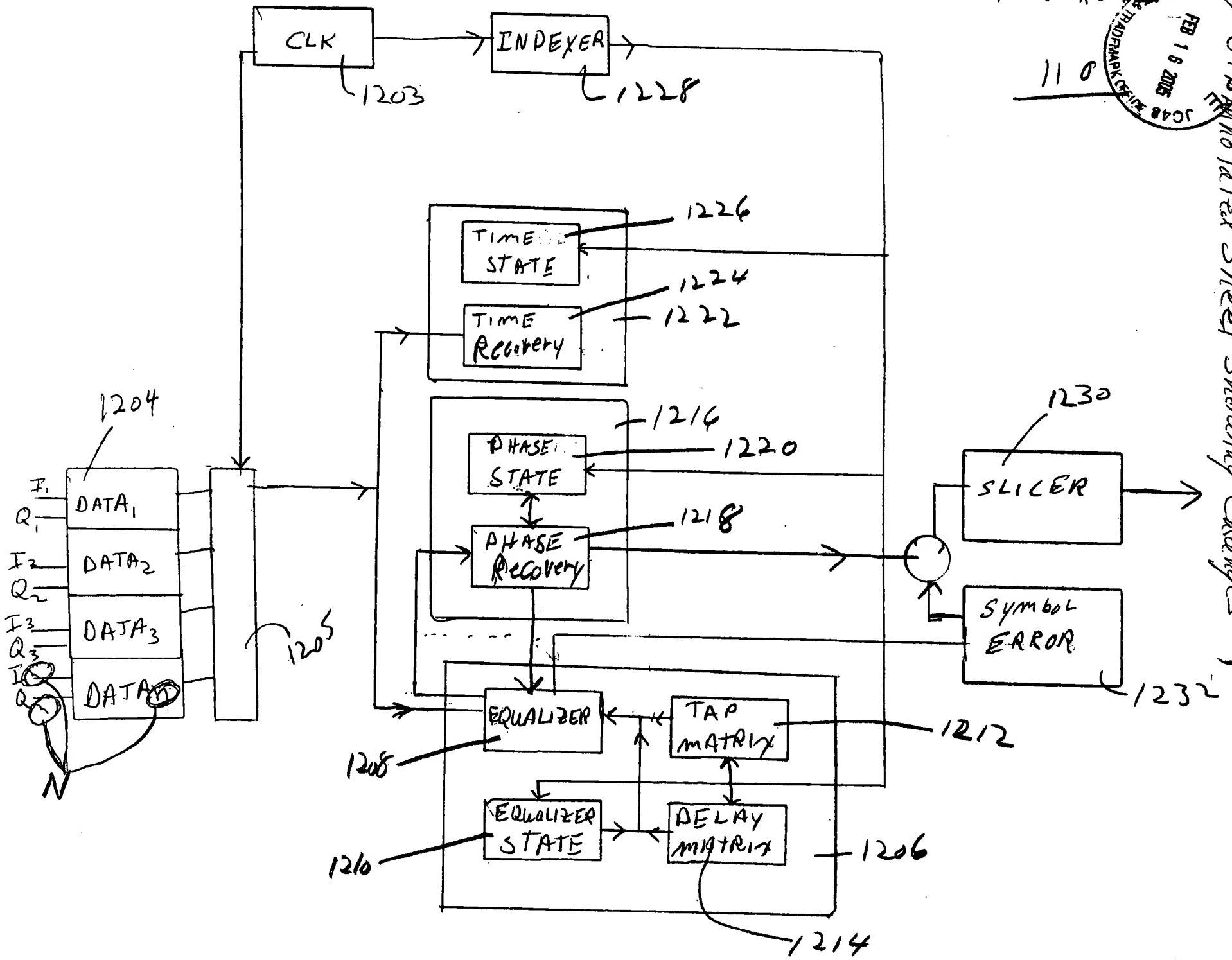


FIGURE 12



01 Amended Sheet Showing Changes

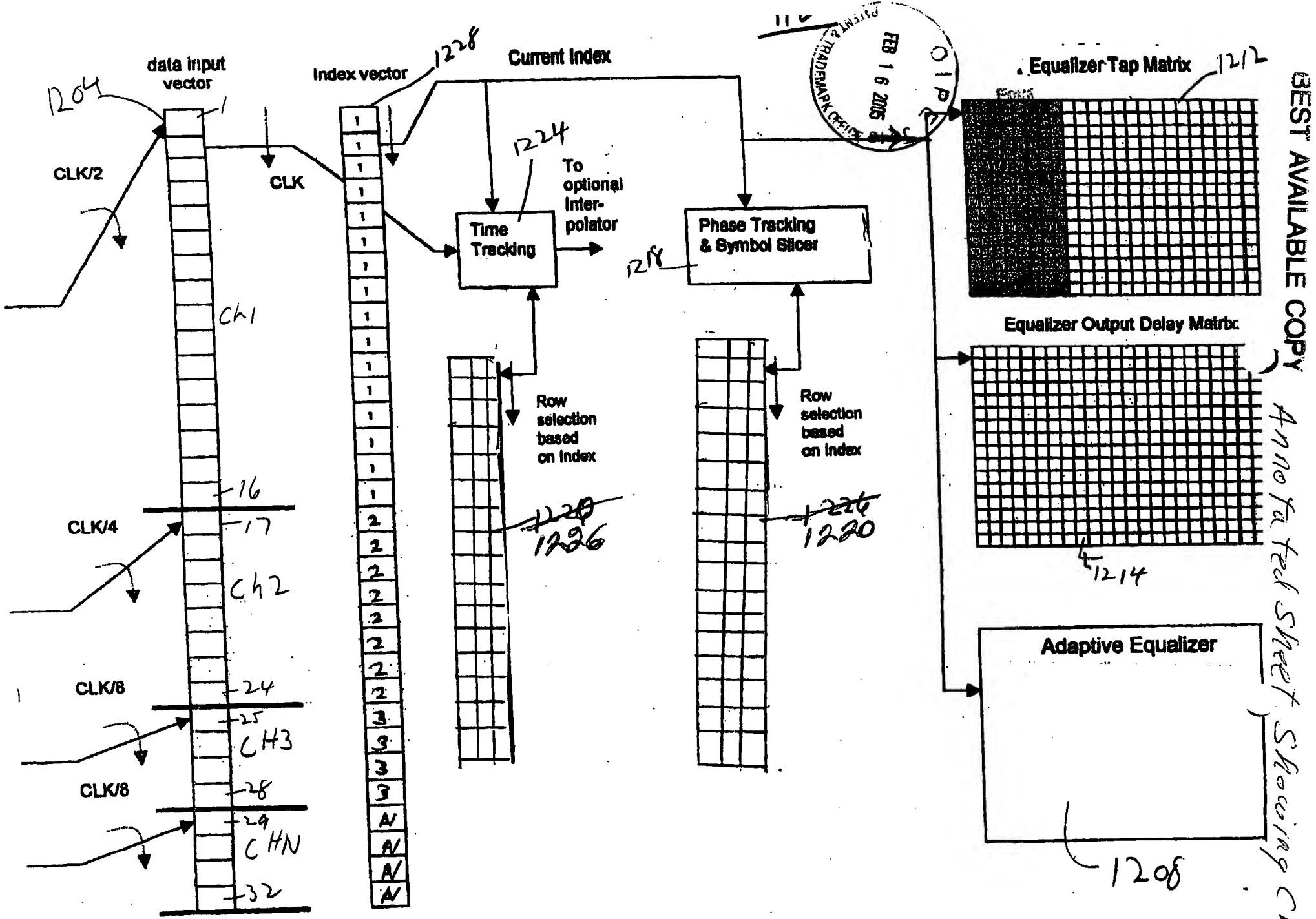


FIGURE 13

Annotated Sheet Showing Changes